BOOK REVIEWS

INTEGRATED EXPERIMENTAL ECOLOGY, ed. by Heinz Ellenberg, with pp. 214. London: Chapman & Hall Ltd. Berlin, Heidelberg, New York: Springer-Verlag, 1970. £6.70 (U.K.).

This is Volume 2 in the series Ecological Studies, the first being an Analysis of Temperate Forest Ecosystems which the reviewer unfortunately has not yet read.

It would seem from reports that the earlier work is of more general interest and likely to enjoy greater readership. Which might be a pity as this volume is very much a methodological treatise concerned with co-operative research in progress within the framework of the International Biological Programme: it has therefore a validity which a collection of articles by an international panel—no matter how distinguished—cannot possibly achieve.

The Solling Project of the German Research Association (Solling is a forest and grassland area near Göttingen) commenced in 1967 and is to be completed in 1972. Nevertheless this is more than a mere interim report, being an invaluable practical guide for any research group studying ecosystems.

Integrated projects of this nature have been accorded high priority by IBP participants and this pilot scheme is no exception, being an exemplary example of experimental environmental research. The IBP in its present form ceases to function after 1972 but the urgent necessity for evaluation of the human environment will continue as "Our very existence depends upon an exact study": the research worker and student at all levels will learn from this volume how to acquire the necessary quantitative data.

In 214 pages, a German team under the co-ordinating director (and editor) Professor Ellenberg have produced a publication on the grand scale. Substantially bound, well-documented, a plethora of tables and figures well-integrated with the text, photographs perhaps no more than adequate, this coverage of four years work would put many completed research publications to shame—those of the F.A.O. immediately spring to mind.

References are cited at the end of each chapter and obviously many are of outstanding quality; it is a pity therefore that they have been published in journals which are either relatively obscure or are difficult to obtain in South Africa. There is frequent alternation of type setting and paper quality but this does not materially affect the presentation.

The work is in four parts and, considering the mammoth size of the project team and the number of contributors, is surprisingly consistent. There is an Introductory Survey by Ellenberg; Part 1 is concerned with Primary Production; Part 2 with Secondary Production; Part 3: Environmental Conditions and Part 4: Range of Validity of the Results. There is a Subject Index. As several research projects have still to be integrated in the final synthesis, Part 4 suffers rather more than the others from lack of cohesion. There are other gaps too, but there must have been a very high degree of cooperation at all levels to achieve such an effective synthesis of data in so many fields.

Though perhaps not so suitable for the layman, all who are interested in the environment of man can derive benefit from it. The methods and data presented will aid other countries participating in IBP projects and South African students will certainly gain from the experience recorded.

Astonishingly little is known about the functioning of terrestrial ecosystems and the impact of man upon them: in Southern Africa the need for research is not only desirable it is urgent. This book illustrates that unless we put our house in order, life will be impossible—and the expectation of it highly improbable.

O. KERFOOT

NEW RESEARCH IN PLANT ANATOMY, ed. by N. K. B. Robson, D. F. Cutler, and M. Gregory. Supplement 1 to the Botanical Journal of the Linnean Society Vol. 63, with xii + 250 pp., numerous micrographs and line drawings. London: Academic Press, 1970. £6.

This volume consists of twenty original research papers on plant anatomy, some of which were read at a symposium arranged in 1970 by the Plant Anatomy Group of the Linnean Society, in honour of Dr. C. R. Metcalfe, after his retirement from the post of Keeper of the

Jodrell Laboratory, Royal Botanic Gardens, Kew. A high proportion of the contributors have at some time worked at the Jodrell Laboratory during his tenure of office there.

The contributions are of a high standard and show the wide range of anatomical subjects which are being investigated all over the world.

Several papers give the classical approach to plant anatomy: P. B. Tomlinson gives the first unequivocal demonstration of true dichotomy in a monocotyledon, *Flagellaria*, involving the division of the apical meristem into two more or less equal halves; this is quite distinct from the so-called dichotomous branching found in many woody monocotyledons. Flora Scott and B. Bystrom studied in *Hibiscus esculentus* a generally ignored subject namely the structure of mucilage-producing idioblasts. Continuing his studies on vessel anatomy and specialisation, V. I. Cheadle deals with the vessels in the monocotyledons Pontederiaceae, Ruscaceae, Smilacaceae, and Trilliaceae. D. R. Kaplan shows that the nodal appendages of the "rachisleaves" of two Umbelliferous genera are equivalent to reduced pinnae of a compound leaf. R. A. Howard reviews the nodal structure of stems, giving special attention to the "split-lateral" leaf traces found in eight families.

In two contributions the application of the electron microscope is shown: A. Fahn et al. studied the ultrastructure of the nectar-secreting hairs of *Lonicera japonica*, attempting also to find the cell organelles responsible for nectar secretion. The use of the scanning electron microscope for the study of wood is illustrated by G. W. D. Findlay and J. F. Levy.

Several more papers on wood structure are included: P. Greguss deals with the structure of xylem rays in the Araucariaceae, and L. Chalk with the length of fibres and vessel members in early and late wood of *Fraxinus* species. S. Carlquist shows that the sections of the genus *Euphorbia*, from Hawaii, the Macaronesian Islands, and Africa respectively, differ in wood structure and concludes that in these groups woodiness developed independently from herbaceous ancestors.

No less than eight papers deal with comparative anatomy and systematics: N. H. Brittan gives a preliminary survey of the stem and leaf anatomy of 26 species of *Thysanotus* and attempts to correlate anatomical characters with morphological groupings. C. A. Stace shows that the British species of a subgenus of *Juncus* can be distinguished by anatomical features. W. R. Philipson finds that the floral anatomy of members of the Araliaceae confirms the close relationship of this family to Umbelliferae. An anatomical study by E. A. Ayensu of the vegetative organs of two yams (*Dioscorea rotundata* and *D. cayenensis*) which are not easily separated on exomorphic grounds shows that they are indeed two species. I. Kukkonen shows on anatomical grounds that *Carex camptoglochin*, whose distinction from *C. microglochin* was uncertain, is a distinct species. Margaret Stant gives an anatomical analysis of the rare monocotyledonous saprophyte *Petrosavia* and assesses its relationship with other groups. W. L. Stern et al. find considerable similarities in the anatomical characters of species of *Ribes* and conclude that it cannot be validly separated on anatomical grounds into two taxa.

Two papers deal with seed anatomy: K. A. Chowdhury and G. M. Buth were able to prepare a key based on seed morphology and seed coat anatomy for ten genera of the Papilionatae occurring in India; and J. G. Vaughan deals with the anatomical structure of seeds used in the animal feed industry.

The only contribution from a non-anatomist is from H. T. Clifford, who gives a resumé of his numerical taxonomic work on monocotyledonous families and a more detailed analysis of three families, by employing reproductive and anatomical characters.

The book concludes with a list of Dr. Metcalfe's publications.

The numerous micrographs and other illustrations are excellent and the standard of production of the volume is high. A detailed index is supplied.

The book is mainly for the plant anatomist and will be a very welcome addition to his library. The taxonomist will also be interested and several articles may be useful to the lecturer who teaches advanced plant anatomy.

M. P. DE VOS

INSTRUCTIONS TO CONTRIBUTORS TO THE JOURNAL OF SOUTH AFRICAN BOTANY

This Journal provides a medium for the publication of the results of botanical research primarily on the flora of Southern Africa, whether systematic, morphological, ecological or otherwise and whether carried out in South Africa or elsewhere. Papers on botanical subjects of special interest and application in South Africa may be included.

Contributions must be original and should not be translations of previously published papers.

Papers must be submitted in final, corrected form. They are accepted for publication on the recommendation of the Editorial Committee.

Authors may be charged expenses for corrections if alterations are excessive.

COPY

Papers should be type-written, double spaced throughout on one side of the paper and with margins of at least 3 cm (1 inch). Footnotes and elaborate tables should be avoided. Latin binomials should be underlined once to indicate italics. All other marking of copy should be left to the Editor. The original, plus at least one carbon copy, must be submitted.

GENERAL LAY-OUT

Each paper should be headed with a concise informative **title** in capitals with the author's name below. This should be followed by the name of the institution, where the work was carried out, underlined and placed within brackets.

A concisely written **abstract** in English and Afrikaans, of not more than 200 words, should precede the text.

The subject matter should be divided into sections under short appropriate **headings** such as: INTRODUCTION, MATERIAL AND METHODS, RESULTS, DISCUSSION, CONCLUSION, ACKNOWLEDGMENTS, etc.

Tables and **illustrations** should be on separate sheets. **Figures** and **graphs** should be in Indian ink on white card or Bristol board. Lettering for figures can be inserted by the printers in which case authors should indicate the desired lettering on the original figure lightly in pencil. The maximum dimensions available for figures are 18 cm × 12 cm (7″ × 4½″). Line drawings for blocks should be at least twice the size they will be when reduced for publication. All figures should be supplied with a scale. The most suitable method of indicating magnification is a scale line (in metric units) incorporated in the figure. Photographs for half-tone reproductions should be on glossy paper, clearly marked on the reverse side (in pencil) to indicate the top. Line drawings and half-tone illustrations are termed figures and should be numbered consecutively. Captions for figures should be typed on a separate sheet of paper.

TAXONOMIC PAPERS

Authors must adhere to the International Rules of Botanical Nomenclature. **Abbreviations** and **herbaria** must be cited in accordance with the most recent edition of Index Herbariorum, Pt 1 (The Herbaria of the World, 5th ed., 1964). When **new species** are described, the exact location of type material must be indicated. When proposing **new combinations** the full citation of the basionym is required. **Indented keys** with numbered couplets are preferred when dealing with a small number of taxa. **Bracket keys** should be used when dealing with a large number of taxa. When citing **synonyms** they should be arranged chronologically into groups of nomenclatural synonyms and these should be arranged chronologically by basionyms. Whenever possible, the types of the basionyms should be cited, e.g.:

Bequaertiodendron magalismontanum (Sond.) Heine & J. H. Hemsley in Kew Bull. **1960**: 307 (1960).
Chrysophyllum magalismontanum Sond. in Linnaea **23**: 72 (1850). Type: Magaliesberg, *Zeyher,* 1849 (S, holo; BOL!, SAM!).
Zeyherella magalismontana (Sond.) Aubrév. & Pellegr. in Bull. Soc. bot. Fr. **105**: 37 (1958).
Pouteria magalismontana (Sond.) A. Meeuse in Bothalia **7**: 335 (1960).
Chrysophyllum argyrophyllum Hiern, Cat. Afr. Pl. Welw. **3**: 641 (1898). Syntypes: Angola, *Welwitsch* 4827, 4828, 4829 (BM!).
Boivinella argyrophylla (Hiern) Aubrév. & Pellegr. in Bull. Soc. bot. Fr. **105**: 37 (1958).
Chrysophyllum wilmsii Engl., Mon. Sapot. Afr.: 47 t. 16 (1904). Type: Transvaal *Wilms* 1812 (B†, holo.; K!).
Boivinella wilmsii (Engl.) Aubrév. & Pellegr. in Bull. Soc. bot. Fr. **105**: 37 (1958).

CITATION OF SPECIMENS

In the interests of uniformity contributors are requested to follow the recommendations of the Botanical Research Institute, Pretoria (Technical note: Gen. 4, Oct., 1967) by citing specimens according to the one degree grid system. Distribution data are given separately for each province and are arranged in the following sequences: South West Africa, Botswana, Transvaal, Orange Free State, Swaziland, Natal, Lesotho, Cape. Within each province degree squares are listed in numerical sequence, i.e., from west to east and from north to south. Whenever possible locality records should be given to within a quarter degree square. The collectors' names and numbers are underlined (printed in italics) to avoid confusion with the numbers of the degree squares, e.g.: NATAL–2829 (Harrismith): Cathedral Peak Forest Station (-CC), *Killick* 5127 (PRE); . . . CAPE–3418 (Simonstown): Hottentots Holland mountains, Somerset Sneeukop (-BB), Nov., *Stokoe s.n.* sub. SAM *56390* (SAM).

REFERENCES

These should begiven in the text as follows: Jones (1968) or (Jones, 1968) or, where reference to a specific page is required, Jones (1968:57) or (Jones, 1968:57). **Literature cited** should be arranged alphabetically by surnames, chronologically within each name, with suffixes a, b, etc., to the year for more than one paper by the same author in that year Titles of **periodicals** must be abbreviated according to the *World List of Scientific Periodicals,* 4th ed., London: Butterworth or when unable to trace the title in this list (as will be the case in taxonomic papers where abbreviations of 18th and 19th century periodicals art required) the abbreviations given in *Botanico-Periodicum-Huntianum,* Pittsburgh: Hune Botanical Library, 1968, should be followed. Periodical titles should be underlined once (for italics). If an author is unable to determine the correct abbreviation of a journal title he is advised to type it out in full and leave its abbreviation to the Editor. Titles of **books** should be underlined and given in full, together with the place of publication, name of the publisher and an indication of the edition if other than the first; e.g.:

Davis, P. H. and Heywood, V. H., 1963. *Principles of Angiosperm Taxonomy.* Edinburgh and London: Oliver and Boyd.

Riley, H. P., 1960. Chromosome numbers in the genus *Haworthia. Jl S. Afr. Bot.* **26**: 139—148.